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THE AVIAN TUBERCULIN TEST AND ITS SPECIFICITY

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INTRODUCTION

The reliability of the avian tuberculin test has been studied by many investigators. Attempts to produce a satisfactory thermic reaction were unsuccessful and Van Es and Schalk (1914), using a 50 per cent. solution of crude tuberculin and making the injection intradermally in the wattle, were the first to report any degree of accuracy in its application. Of 601 fowls tested by them, 277 were examined *post-mortem* with the following results :—

Number of positive reactors	90	
Number of positive reactors with lesions	88	(97·77 per cent.)
Number of positive reactors without lesions	2	(2·23 „)
Number of doubtful reactors	57	
Number of doubtful reactors with lesions	27	(47·36 „)
Number of doubtful reactors without lesions	30	(52·64 „)
*Number of negative reactors	130	
Number of negative reactors with lesions	10	(7·69 „)
Number of negative reactors without lesions	120	(92·31 „)

These writers state that the presence of a positive reaction in the fowls was an almost certain indication of tuberculous infection. Stubbs (1925), using powdered avian tuberculin in carbol saline solution, found that of a total of 923 birds which reacted positively to the tuberculin test, 853, or 92·4 per cent., showed lesions of tuberculosis on *post-mortem* examination. He states that this figure may err on the low side as the examinations were carried out under unfavourable conditions and attention confined to an examination of the livers, spleens and intestines. Downham (1935) describes a tuberculous flock which he tested three times and in which the first test yielded 19 per cent. positive reactors, the second 5 per cent. and the last, one positive reactor, and states that lesions of tuberculosis were found in all the positive reactors on *post-mortem* examination. Mastrofrancisco and Raimo (1940) record that 71, or 95·95 per cent., of 74 positive reactors showed lesions of the disease and on this and other evidence conclude that the test has a high degree of efficiency. Canham and Blomfield (1940) carried out a series of tuberculin tests on a total of 429 birds, and of 97 positive reactors examined *post mortem*, 88, or 90·72 per cent., proved to be tuberculous. As a contrast, however, to these results, Feldman (1934), while investigating the comparative value of different concentrations of crude tuberculin in the diagnosis of tuberculosis in fowls, had one group of 11 birds which, though giving positive reactions to the routine tuberculin test, showed no lesions of the disease when examined *post mortem*.

The possibility of fowls being sensitized to avian tuberculin by acid-fast bacteria other than those of avian or mammalian origin and by other substances has been studied by some writers. Feldman (1933) found that though chickens were not susceptible to infection with human and bovine types of *M. tuberculosis*, they could be sensitized to mammalian tuberculin and sometimes avian tuberculin by them. Fowls could not be sensitized to avian or mammalian tuberculin by exposure to different strains of acid-fast bacteria other than those of *M. tuberculosis*. In this part of his experiment, Feldman used strains of *M. chelonei*, *M. smegmatis*, *M. phlei*, *M. paratuberculosis*, two strains of acid-fast organisms of soil origin and two apparently non-pathogenic strains isolated from bovines. Ivanoff (1933) reported that fowls could be sensitized to avian tuberculin by previous simultaneous inoculation of tuberculin and normal swine serum and sometimes by tuberculin or normal swine serum alone. He also found that fowl pox vaccine could sometimes sensitize birds to tuberculin, but this does not appear to have been confirmed by other writers.

From collected experiments it would appear that the avian intradermal tuberculin test is regarded as a very satisfactory one, providing care is exercised in making the injection intradermally into the wattle and a reliable tuberculin used. However, in practically all experiments carried out on fowls, there has been a small percentage of positively reacting birds, varying approximately from 2 to 10 per cent., in which no lesions of tuberculosis could be demonstrated, and it was considered that it would be valuable to repeat in outline some of the experiments mentioned above, using tuberculin prepared from a synthetic medium but making cultural, biological and other tests in the

* In their summary of results, Van Es and Schalk present a list which is somewhat confusing. They apparently had a total of 130 negatively reacting birds, *i.e.*, 120 without lesions and 10 with lesions. This would appear to give percentage results of 92·31 and 7·69 respectively instead of the figures of 91·53 and 8·47 quoted by them.

cases of no-lesion reactors. It was subsequently decided to include negative reactors and (where no macroscopic lesions were present, of course) to subject them to the same examination in order to ascertain if there was any demonstrable infection with avian tubercle bacilli which had failed to sensitize them.

In order to obtain material, visits were made to four farms on which tuberculosis was known to have existed for many years and the stock was tuberculin-tested. All positive reactors and as many negative reactors as possible, were transferred to the laboratory premises where they were retested within a period of 35–106 days from the time of the original farm test. Unfortunately, owing to various difficulties it was not found possible to correlate the result of the farm test with that of the retest. A number of birds from various other sources were also included in the experiment and the total number of birds thus obtained was 477 but owing to deaths and other causes, the total number retested and included in the experiment was 396. The number of negative reactors was comparatively small owing to the natural reluctance of owners to part with healthy stock, especially when in full egg production.

Technique

The birds were divided into small lots and were, group by group, subjected to the usual routine tuberculin test, the dose of tuberculin being 0·1 c.c. injected intradermally into the tip of the wattle, and the result read in 48 hours. The tuberculin used in all the tests was produced from a synthetic medium. Upon reading the reaction and noting the general condition, the birds were immediately killed for *post-mortem* examination.

Post-mortem examination was carried out as thoroughly as possible, particular attention being paid to the livers, spleens, intestines, bones, joints and lungs. When a fowl showed no obvious lesions, whether a positive or a negative reactor, the examination was extended to as many tissues as was practicable.

Liver and Spleen.—Lesions in these organs were regarded as being tuberculous provided they were typical macroscopically and that acid-fast bacilli could be demonstrated in smears stained by the Ziehl-Neelsen method. If no apparent lesions were present, the liver and spleen were cut into thin slices and carefully examined for any suspicious tubercles.

Intestine.—If no typical lesions were present, the gizzard and intestine were removed, washed out and opened. As it was observed that tuberculous lesions were frequently present in the caecal tubes in positive cases, special attention was paid to these appendages.

Bones and Joints.—Attention was confined chiefly to the joints and long bones of the legs. After the musculature had been cut away, the tibiae and femora were disarticulated, split longitudinally with a pair of bone forceps and the marrow scraped out on to a filter paper. It was found that by this means, small or early lesions could be most readily observed.

Lungs.—These were removed from the thorax together with portion of the trachea, washed and cut into thin slices and then teased out with a scalpel or mounting needle and forceps. Owing to their spongy nature, small lesions were easily overlooked in these organs.

The presence of lesions in any organ or tissue was always confirmed by examination of Ziehl-Neelsen smears for acid- and alcohol-fast bacilli.

Upon finding no lesions in a bird, whether a positive or a negative reactor, the following procedure was carried out.

1. Smears were made at random from the liver, spleen, bone-marrow and lungs, stained by the Ziehl-Neelson method and thoroughly examined for acid-fast organisms.

2. Cultures were made on Löwenstein's medium from the liver, spleen and bone marrow.

3. Sections were cut at random from the liver, spleen and lungs, stained with haematoxylin and eosin and by the Ziehl-Neelsen method and examined for tuberculous foci and acid-fast organisms. The preparation of serial sections would have been ideal but the impracticability of carrying out such a procedure in an experiment of this type is obvious.

4. Portions of the liver, spleen and bone marrow were ground up thoroughly in 30 c.c. sterile normal saline solution, placed in a large sterile centrifuge tube plugged with cotton wool, allowed to stand at room temperature for about an hour and the supernatant fluid then decanted. One healthy fowl and two white or cream coloured guinea-pigs, each of not less than 250 g. weight, were inoculated with the supernatant fluid, the fowl receiving 10 c.c. intramuscularly in the breast and the guinea-pigs 0·5 c.c. each intramuscularly in the leg. The fowl was tuberculin tested and killed for *post-mortem* examination within two to three months. The guinea-pigs were tuberculin tested intradermally in the flank after an interval of six weeks with 1 in 5 and 1 in 10 dilutions of avian tuberculin, the resulting reaction being recorded 24 hours after injection. They were subsequently killed for *post-mortem* examination. The inoculum was considered to have contained avian tubercle bacilli if the fowl and the guinea-pigs reacted positively to the tuberculin test and/or the fowl showed lesions of tuberculosis on *post-mortem* examination.

In cases where cultures, sections or biological tests gave positive results, the birds from which they were made were considered to have been affected with tuberculosis at the time of *post-mortem* examination and are included in the following tables under the heading of "P.M.E.+."

Note.—In the following tables, the symbols used and their significance are as follows :—

+	=	Positive reactor to the tuberculin test.
±	=	Doubtful " " "
—	=	Negative " " "
T.B. test	=	Tuberculin test.
P.M.E.	=	*Post-mortem* examination.
P.M.E.+	=	Affected with tuberculosis on *post-mortem* examination.
P.M.E.—	=	Negative for tuberculosis on *post-mortem* examination.

RESULTS

I. Farm A.—The birds on this farm were mostly over two years old and were housed in large permanent structures with wooden or earthen floors and ranged freely through the farmyard and neighbouring fields. This farm was visited on May 9th and 11th, 1939, and a total of 331 birds were tuberculin tested, of which 98, or 29·6 per cent., gave positive reactions. These 98 birds were then transferred to the laboratory, five dying

before a retest could be made. The remaining 93 were retested between June 13th and July 15th, 1939. Table I shows the results of the retests and of the *post-mortem* examinations.

TABLE I (FARM A)

	Birds in good or fair condition.			Birds in poor or emaciated condition.			Total.		
	+	±	—	+	±	—	+	±	—
	86	—	1	5	—	1	91	—	2
P.M.E.+	84	—	1	5	—	1	89	—	2
P.M.E.—	2	—	—	—	—	—	2	—	—

The lesions were distributed in the five principal situations as follows :—

Liver	82	per cent.
Spleen	67	,,
Intestine	43	,,
Joints and bone-marrow ...	65	,,
Lungs	9	,,

One bird had a tuberculous lesion in the myocardium.

II. FARM B.—As in Farm A, a large proportion of the birds were over two years old and were on free range but were accommodated in four very small slatted-floor houses. This farm was visited on May 10th and 12th, 1939, and a total of 241 birds were tested of which 37, or 15·4 per cent., reacted positively. These 37 were transferred to the laboratory, seven dying before retesting. The remaining 30 were retested between August 8th and 19th, 1939. Table II shows the results of the retests and of the *post-mortem* examinations.

TABLE II (FARM B)

	Birds in good or fair condition.			Birds in poor or emaciated condition.			Total.		
	+	±	—	+	±	—	+	±	—
	29	—	—	—	—	1	29	—	1
P.M.E.+	26	—	—	—	—	1	26	—	1
P.M.E.—	3	—	—	—	—	—	3	—	—

The lesions were distributed as follows :—

Liver	93	per cent.
Spleen	59	,,
Intestine	22	,,
Joints and bone-marrow ...	30	,,
Lungs	26	,,

III. FARM C.—The stock on this farm were mixed but at least half of them were over two years old. They were all housed in one very large permanent structure with a wooden floor and had free range over good grassland. This farm was visited on May 23rd and 25th, 1939, and a total of 237 birds were tested, of which 37, or 15·6 per cent., gave positive reactions. These 37 together with 15 negative reactors were removed to the laboratory where nine died before retesting. The remaining 43 were retested between July 17th and August 8th, 1939. Table III shows the results of the retests and of the *post-mortem* examinations.

TABLE III (FARM C)

	Birds in good or fair condition.			Birds in poor or emaciated condition.			Total.		
	+	±	—	+	±	—	+	±	—
	31	—	8	—	—	4	31	—	12
P.M.E.+	30	—	—	—	—	4	30	—	4
P.M.E.—	1	—	8	—	—	—	1	—	8

The lesions were distributed as follows :—

Liver	82	per cent.
Spleen	82	,,
Intestine	26	,,
Joints and bone-marrow ...	50	,,
Lungs	3	,,

IV. FARM D.—All the birds tested here were two to four years old and were accommodated in old permanent houses with concrete floors and large runs. This farm was visited on June 13th and 15th, 1939, and a total of 740 birds were tested of which 194, or 26·2 per cent., reacted positively. These 194 and four negative reactors were transferred to the laboratory. Before retesting, 34 died and 34 were given over to another experiment and the remaining 130 were retested between July 19th and September 29th, 1939. Table IV shows the results of the retests and of the *post-mortem* examinations.

TABLE IV (FARM D)

	Birds in good or fair condition.			Birds in poor or emaciated condition.			Total.		
	+	±	—	+	±	—	+	±	—
	102	3	5	16	1	3	118	4	8
P.M.E.+	96	2	2	16	1	3	112	3	5
P.M.E.—	6	1	3	—	—	—	6	1	3

The lesions were distributed as follows :—

Liver	96	per cent.
Spleen	73	,,
Intestine	30	,,
Joints and bone-marrow ...	43	,,
Lungs	18	,,

One bird had a tuberculous lesion involving the structures of the eye and giving the appearance of roup. Material from this lesion was teeming with acid-fast organisms.

V. Miscellaneous Lot.—A total of 100 birds was obtained from various sources, all of which were associated with long-standing tuberculosis in the flocks. The ages of these birds varied from two to six years and all were tuberculin tested between June 21st and September 12th, 1939. Table V shows the results of the tests and of the *post-mortem* examinations.

It will be noted from Table V that in this group the percentage of negative reactors showing lesions of tuberculosis on *post-mortem* examination is high (40 per cent.). This high figure affects to a great extent the corresponding figure in the final total result shown in Table VI and it is only fair to the test to point out that a large number of birds in this miscellaneous group had given doubtful and unusual reactions when tested in the field by other veterinarians and were in some cases sent in to the laboratory on that account.

Table V (Miscellaneous)

	Birds in good or fair condition.			Birds in poor or emaciated condition.			Total.		
	+	±	—	+	±	—	+	±	—
	62	12	16	4	2	4	66	14	20
P.M.E.+	55	9	5	4	2	3	59	11	8
P.M.E.—	7	3	11	—	—	1	7	3	12

The lesions were distributed as follows :—

Liver	91	per cent.
Spleen	85	,,
Intestine	35	,,
Joints and bone-marrow ...	47	,,
Lungs	27	,,

The following Table VI shows the total results for the four farms and miscellaneous lot.

The distribution of lesions in the most commonly affected tissues of the total of 343 birds which showed lesions of tuberculosis on *post-mortem* examination is represented diagrammatically in Fig. 1.

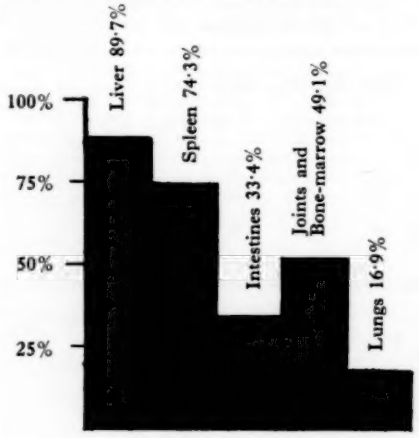

Fig. 1.
DISTRIBUTION OF LESIONS

The results of the tests on these seven birds are summarized in Table VII.

No inoculations were made in the case of No. 1069 as the tissues required for the purpose were accidentally discarded beforehand, but as a random smear from the marrow of the left tibia revealed scanty acid-fast organisms and the culture therefrom was typically avian in character, it was considered that it could with justification be included in this table. In some cases, although cultures, sections and smears were negative,

Table VI (Total)

	Birds in good or fair condition.			Birds in poor or emaciated condition.			Total.		
	+	±	—	+	±	—	+	±	—
	310	15	30	25	3	13	335	18	43
P.M.E.+	291 (93·9%)	11 (73·3%)	8 (26·7%)	25 (100·0%)	3 (100·0%)	12 (92·3%)	316 (94·3%)	14 (77·8%)	20 (46·5%)
P.M.E.—	19 (6·1%)	4 (26·7%)	22 (73·3%)	—	—	1 (7·7%)	19 (5·7%)	4 (22·2%)	23 (53·5%)

From Table VI it can be seen that of a total of 335 positive reactors to the tuberculin test, 316, or 94·3 per cent., proved to be tuberculous on *post-mortem* examination. This figure corresponds fairly closely with that of 97·77 per cent. of Van Es and Schalk, 92·4 per cent. of Stubbs, 95·95 per cent. of Mastrofrancisco and Raimo and 90·72 per cent. of Canham and Blomfield. Cultural, biological and other tests detected tuberculous infection in seven of the 26 positive reactors in which no obvious lesions of the disease could be seen on *post-mortem* examination. the inoculated guinea-pigs gave positive or doubtful reactions to the 1 in 5 dilution of tuberculin only, while the fowl remained negative to the tuberculin test and no lesions could be found on *post-mortem* examination. These were classified as negative results. All the corresponding tests carried out on the no-lesion negative reactors gave completely negative results.

There were 19, or 5·7 per cent., positive reactors, therefore, in which no tuberculous infection could be demonstrated. One would not be justified, however, in classifying all of these as non-specific reactions, for,

Table VII

Number.	T.B. test.	P.M.E.	Cultures.	Sections.	Random smears.	Guinea-pigs.		Fowl.	
						T.B. test.	P.M.E.	T.B. test.	P.M.E.
1006	+	—	+ (lung)	+ (lung)	+ (lung)	—	—	—	—
1069	+	—	+ (marrow)	—	+ (marrow)	(No inoculations)			
1081	+	—	—	—	—	+	—	+	+
1094	+	—	—	—	—	+	—	+	—
1109	+	—	+ (spleen)	—	—	+	+ (local lesion)	+	+
1141	+	—	—	—	—	—	—	+	+
1335	+	—	—	—	—	±	—	+	+

as Feldman (1938) points out, it is impracticable to examine minutely all organs and tissues of a bird and it is difficult sometimes to demonstrate tuberculous infection, especially when the lesions are early or scanty and microscopic. Because of the failure in some cases to find lesions of tuberculosis in positively reacting birds there has been some tendency to criticise the specificity of the avian tuberculin test. These criticisms are often not justified. As Blount (1938) writes: "The avian tuberculin test may have been considered a failure in the past because a number of animals tested and reacting positively have been found at *post-mortem* examination to be free of lesions. As a fact, it is probable that a number were merely free of gross lesions in the two most commonly affected organs, namely, the liver and spleen." Undoubtedly, a small percentage may be non-specific and are difficult to explain. To quote Feldman (1934): "Chickens which react in the characteristic manner to the tuberculin test and yet fail to disclose demonstrable evidence of infection constitute a problem that is basically not unlike that presented by the so-called no-lesion reactors encountered in making the tuberculin test in cattle." Ivanoff (1933) claims that sensitivity to avian tuberculin may be set up in birds by exposure to substances other than *M. tuberculosis avium* and there is a possibility that in some cases the same may occur naturally in the field. Manninger (1939) makes an interesting observation with regard to the tuberculin test in fowls which harbour the organisms of fowl cholera. He found that there was a tendency to set up the so-called wattle disease upon injection of tuberculin into the wattles of birds so affected and states that this might easily be mistaken for a positive reaction but he noted that the character of the swelling was somewhat different, persisted for a longer period than a positive tuberculin reaction and appeared to be subject to seasonal variation. This reaction is not likely to have much bearing on the interpretation of the test under ordinary field conditions.

It will be seen from Table VI that of 43 negative reactors 20, or 46·5 per cent., were found to be tuberculous on *post-mortem* examination. However, of these 20 birds, 12 were in poor or emaciated condition and would have been culled in a routine farm test. The fact that infected fowls in this condition sometimes do not react positively to the test is well recognised. The remaining eight negative reactors, though maintaining a healthy appearance during life and showing none of the symptoms usually associated with tuberculosis, were found to be extensively affected with the disease on *post-mortem* examination. All had multiple miliary lesions in the livers and spleens, three had intestinal and bone marrow lesions and one had lesions in the lungs. Similar experiences have been quoted by other writers. Feldman (1938) remarks on the lack of correlation in some cases between the character of a reaction and the degree of infection. Canham and Blomfield (1940) found that extensive infection might produce slight or negative reactions. These writers also refer to the remarkably good condition in some of the generalised cases. It is obvious that birds which harbour such an extensive infection, remain in good condition even temporarily and fail to react positively to the tuberculin test, constitute the chief danger in perpetuating tuberculosis in a diseased flock. It is probable, however, that fowls so affected would soon succumb to some direct result of the infection such as ruptured liver or eventually lose condition rapidly and become clinical cases. Generalised infection was shown on *post-mortem* examination in 46, or 14·8 per cent., of birds in good condition and in 27, or 67·5 per cent., of those in poor or emaciated condition.

Tuberculosis was demonstrated in 14, or 77·8 per cent., of 18 doubtful reactors. This would indicate that doubtful reactors should always be regarded as infected and be disposed of with the positive reactors.

With regard to the distribution of lesions, the percentages given in Fig. 1 correspond generally to those quoted by other writers in Table VIII in which they are included. The liver (89·7 per cent.) and spleen (74·3 per cent.) are undoubtedly the organs most frequently affected, with the joints and bone-marrow (49·1 per cent.) next in order of frequency. It was noted that in many cases the bone-marrow lesions were minute and gave the appearance of small globules of fat. These lesions, which were usually unaccompanied by other obvious ones in the marrow, might easily be overlooked in a routine *post-mortem* examination unless a very careful search was made for them. The intestinal lesions (33·4 per cent.) were always typical and judging by smear examination, always teeming with acid-fast organisms. The percentage of lung lesions (16·9 per cent.) is considerably lower than the figure quoted by some authors. It was noted that in birds which came from farms in which bad ventilation and overcrowding were known to occur (such as Farms B and D) the percentage of lung lesions was much higher than in other cases and would indicate that infection by inhalation was not uncommon.

TABLE VIII

Note. Figures indicate percentages.	Canham and Blomfield.	Hastings and Halpin.	Van Es and Schalk.	Vawter.	Stubbs.	*Vosgien.	*Moore and Ward.	*Edwards.	†Eber.	†Trams.	†Sliwensky.	†Schmidt.	†Kernkamp.	†Busnell and Hinshaw.	†Reiman.	†Feldman.	Weybridge.
Number of examintions	97	29	126	49	923	145	17	?	346	397	50	100	319	?	51	100	350
Liver	72·2	96·6	71·42	87·7	88·5	98·62	76·47	99·00	95	30	30	92	92	97	53	83	89·7
Spleen	43·3	93·1	58·72	61·2	47·0	93·10	47·06	92·70	82	6	6	89	81	97	41	86	74·3
Intestines	28·8	62·0	15·87	59·1	26·1	20·69	35·30	61·20	73	42	40	64	66	75	39	60	33·4
Gizzard			0·79	2				3·12	6	11	12	7	0·3	1		0	
Joints		3·4	1·58			22·76	5·88	43·47				5	4	18		3	49·1
Bones and bone-marrow		6·9		2					90	5	6	91				46	
Lungs	15·4	20·7	7·93	49·0		42·07	5·88	19·23	41	5	6	18	7	27	14	48	16·9

* Quoted by Van Es and Schalk. (1914.) *Bull. N. Dak. Agric. Exp. Stn.* 108. † Quoted by Feldman. (1938.) Avian Tuberculosis Infections

Vawter (1930) describes a flock in which the incidence of lung lesions in infected birds was very high (49 per cent.) and attributed it to respiratory infection due to the unhygienic conditions under which the birds were kept.

Summary

1. Birds totalling 396 in number were tuberculin tested with the following results :—

Positive reactors	...	335 (84·6 per cent.)
Doubtful "	...	18 (4·5 ")
Negative "	...	43 (10·9 ")

2. All were examined *post-mortem* immediately after testing, for evidence of tuberculosis. In all cases, whether a positive, doubtful or negative reactor, where there were no visible lesions, further investigation was made by examining random smears and sections and by cultural and biological tests. These tests detected tuberculous infection in seven of 26 positive reactors which were apparently non-tuberculous on *post-mortem* examination and including these results, the findings were as follows :—

Number of positive reactors with lesions	316 (94·3 per cent.)
Number of positive reactors without lesions	19 (5·7 ")
Number of doubtful reactors with lesions	14 (77·8 ")
Number of doubtful reactors without lesions	4 (22·2 ")
*Number of negative reactors with lesions	20 (46·5 ")
Number of negative reactors without lesions	23 (53·5 ")

* 12 were in poor or emaciated condition.

3. The percentage distribution of lesions found corresponds generally to the figures quoted by other writers.

Conclusions

These findings show that the avian tuberculin test is a reliable one on the positive side and that the small percentage of apparently non-specific reactions is insignificant. The most undesirable feature is its failure in some instances to detect tuberculosis in fowls in which infection is generalised though the birds remain in good condition.

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Weekly Wisdom

By ideas it is that men lead, nations prosper and dominions are established; by ideas dynasties are overthrown, nations convulsed and peoples scattered; by them the tyranny of custom and the dogmas of schools are broken up; by them we interpret, we work and we prophesy.—Sir Clifford Allbutt.

THE VETERINARY RECORD
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AVIAN TUBERCULOSIS

TUBERCULOSIS in fowls continues to be one of the important diseases affecting the flocks in this and other countries. Its presence may not always be apparent, especially as only on comparatively rare occasions may it cause a high mortality. This is accounted for largely because of the insidious nature of the disease, for although young stock may become infected the slowly progressing pathological processes may not damage vital tissues sufficiently to cause death till the fowls have reached an age when they are no longer of economic value. Although actual deaths may not occur to any marked extent, the effect of the infection on the general health of the stock may be such that their laying capacity is greatly reduced and their general usefulness is much curtailed and they become "culls." Further, it has been shown that avian tuberculosis affects cattle to a greater extent than may have been realised. While the disease in cattle is non-progressive and relatively unimportant from a general health point of view, when compared with bovine tuberculosis, the complications of infection with the avian tubercle bacillus in herds undergoing tuberculin tests with a view of eliminating tuberculosis are well known.

Opinions have varied concerning the usefulness of the tuberculin test (with tuberculin derived from the avian tubercle bacillus) in fowls. The article by Spears and Dobson published elsewhere in this issue of *The Veterinary Record* may be accepted as the latest contribution to our knowledge of the subject. The tuberculin used in the investigation was produced from synthetic medium which would obviate to a marked degree undesirable reactions which might have arisen from tuberculins produced on other types of medium; this would tend to simplify the interpretation of the reactions. Further, much care was taken to establish definitely the presence or absence of the infection in positive, doubtful and negative reactors; for this purpose cultural and biological tests were carried out.

From the records of the investigation it can be concluded that tests on fowls with avian tuberculin of the type used are reliable as far as positive reactions are concerned. Although a few non-specific reactions appear to have been produced, their occurrence should not be taken too seriously and certainly should not form an argument for condemning the usefulness of the test. The fact that some grossly affected fowls failed to respond is of greater importance, especially when the birds, though heavily diseased, still remained in good bodily condition. Further research into the most suitable dose and the desirable potency of avian tuberculin is called for. Without carefully planned experiments with tuberculins produced by different methods and of different potencies it is inadvisable to pass criticism or to draw final deductions concerning the usefulness of the test in all cases. With the apparent prevalence of the infection in cattle in this and other countries, reliable tests for the diagnosis of avian tuberculosis both in cattle and poultry are essential for the control of the disease. While the work already accomplished is of great importance in establishing again the usefulness of the tuberculin test, the subject of suitable potency of avian tuberculin must be studied before we can expect entirely satisfactory results.

CLINICAL COMMUNICATION

Successful Treatment of Stubborn Haemorrhage from Lesion of the Nasal Septum

FRED. G. GREER, M.R.C.V.S.,
Clifton, Bristol

Subject, History and Examination.—About a month ago I was called to a Great Dane dog, about four years old. It had been bleeding on and off for six hours, from a small lesion in the skin of the nasal septum. In appearance it most resembled an extensive "cracked lip," and extended horizontally across the septum, being no more than ¼ inch long and slightly narrower in breadth.

The owner had partially managed to stop the haemorrhage with a pad of cotton wool, fixed with adhesive tape, but constant licking soon undid his work. Considerable amounts of blood had been lost, but the patient was not showing evidence of this. The shed blood was found to have clotted only feebly.

On removal of the owner's dressing, blood immediately spurted out in two streams to a distance of about two feet in front of the patient.

Treatment.—Morphia gr. ii was administered hypodermically with the idea of preventing licking; with a similar object a tape muzzle was also applied. A Bayer preparation—"Manetil"—and calcium borogluconate gr. xxx were also given subcutaneously. Locally a pledget of cotton wool soaked in adrenalin solution was fixed on to the lesion with adhesive tape. This temporarily succeeded in arresting the haemorrhage, but after an hour it recurred, but slightly less profusely. As it was now evident that there was no hope of the bleeding stopping spontaneously, a further ampoule of "Manetil" was given, and artery forceps were applied and left *in situ* for an hour. Owing to the cartilaginous nature of the site, ligature or torsion were impracticable. When the forceps were removed haemorrhage recommenced.

A local anaesthetic with adrenalin was injected around the lesion, and the actual cautery was applied. This successfully sealed the vessels. Collodion flexile was painted over the spot until a thick "scab" was produced.

Haemorrhage did not recur and when last seen—three weeks after—the scar of the cautery had almost disappeared.

The owner was unable to give me any information which could serve to reveal the cause of the lesion—other than to say he had noticed it several days previously. The important factor was undoubtedly some deficiency of fibrinogenous elements in the blood.

ABSTRACTS

[METHODS OF EVALUATING THE EFFICACY OF ANTHELMINTICS. Moskey, H. E., and Harwood, P. D. (1941.) *Amer. J. vet. Res.* **2**. 55-59.]

The authors of this paper say that they are chiefly concerned with parasites of the gastro-intestinal canal. The United States Federal Food, Drug and Cosmetic Act of June 25th, 1938, makes the manufacturer or shipper responsible for any claims made for the efficacy of any anthelmintic and the action of the United States Food and Drug Administration against "misbranded worm remedies" has resulted in numerous enquiries for methods for critical evaluation of anthelmintics.

Moskey and Harwood rightly state that it is not possible to describe a test of an anthelmintic which will be adequate under all conditions, because the habits and responses of various species of helminths differ as widely as do those of the various hosts in which they live, and allowance must be made for the variable physical and chemical properties of the substances used as anthelmintics. Tests of anthelmintics may be done *in vitro* or *in vivo*.

In vitro methods are more likely to be valuable the more nearly they approach *in vivo* conditions; they are popular because they enable a large number of substances to be tested rapidly; but results are not necessarily applicable to the conditions under which the parasite lives in the host animal. They can suggest substances likely to be worth testing on the parasite in its host, but they cannot by themselves prove the efficacy or otherwise of anthelmintics. *In vivo* tests based on the scientific method must also be done. The authors have found that closely related chemicals which differ in water solubility have, when tested *in vivo*, shown great variation in their anthelmintic efficiency, but comparatively little difference when tested *in vitro*. Conversely, variations in the melting point of related compounds, within the range of 35° C. to 100° C., have exerted great influence on the *in vitro* efficacy, but comparatively little on the *in vivo* efficacy. These are only two of the many factors which regularly produce a difference between results of *in vitro* as compared with *in vivo* tests.

For the evaluation of anthelmintics the following *in vivo* methods have been used:—

1. *The Dilution Egg Count*, which is, the authors think, "perhaps the best method for estimating the anthelmintic efficacy of drugs to be used in human medicine," the other two methods described being obviously impossible when human parasites are being studied. The authors describe the principles of this test, *i.e.*, the dilution of a measured quantity of faeces with a measured quantity of fluid and the counting of the number of eggs in a small known quantity of this dilution removed while the whole is being agitated to maintain an even suspension of eggs. Dilution egg counts are made before and after the administration of the anthelmintic and the assumption is made that any differences between these are due to the action of the anthelmintic. But many factors may cause wide variations in the normal egg production of helminths, and the drug given may merely depress the reproductive activity of the parasite without destroying it, so that this test is unreliable unless reliable methods of testing the normal error involved have been devised. It is also useless for testing the action of drugs on tapeworms or on parasites whose eggs do not appear regularly in the faeces.

2. *The Critical Test*, advocated by Hall. All the faeces passed during three or more days following administration of the anthelmintic are examined carefully for worms. The animal is then killed and the total number of worms found in the organs is added to the total found in the faeces to give the total present before treatment. In this way the percentage of efficacy of the drug can be calculated. The test must be repeated on a number of animals, because helminths may be passed out for reasons which have nothing to do with anthelmintics and because almost any anthelmintic may show wide variation in its efficacy in different individual hosts. A serious source of error is the fact that, when a slowly acting or partially effective anthelmintic is given to a herbivorous animal, some parasites are digested before they can be passed out in the faeces. Critical tests may be used to correct the results of dilution egg counts. They are not reliable for testing tapeworm remedies unless the head of the tapeworm is found in the faeces of the host or is known to be destroyed; portions of the worm must not be counted as whole worms. Such error may be checked by keeping the animal two or three weeks after the drug has been given and then killing it and examining the gut for any tapeworms that may by then have grown from undestroyed heads. Error may also arise from the fact that the head may be destroyed or subsequently digested before it is passed out in the faeces.

3. *The Controlled Test.*—The example given by the authors is the administration of "50 cysticeroids of the tapeworm in question" to one half of a number of experimental birds, the other half being retained as controls, due precautions being taken against infection of the birds from any other sources. Two weeks later all the birds are killed and all the tapeworms in them are counted. The number found in the controls is regarded as the number probably present before the drug was given and the number found in the treated birds as the number not affected by the drug. At least ten treated and ten control birds should be used and no conclusions can be drawn from a single experiment. The method is most useful for the study of drugs acting on bird parasites, because birds are relatively easily reared under conditions which exclude extraneous infestation. In the study of natural infestation it is less valuable, because these vary widely in different individual animals from the same source, so that a very large number of experiments is necessary to obtain significant results.

No one of these three methods is satisfactory. Combinations of them may be used, but new methods may have to be devised and anthelmintic research should be attempted only by those who are familiar with the basic principles of helminthology and therapeutics. Even experienced helminthologists must proceed cautiously.

The authors decide that the toxicity of drugs tested as anthelmintics is outside the scope of their paper. For methods of evaluating the effects of drugs on parasites in situations other than the gastro-intestinal canal, readers are referred to "the literature."

G. L.

[TUBERCULOSIS IN DOGS. Lovell, R., and White, E. G. (1940.) *Brit. J. Tuberc.* **34.** 117-133.]

In a series of 543 *post-mortem* examinations of dogs, 22, or 4·6 per cent., were found to be tuberculous. The average age of the dogs affected was five years and ranged from twelve months to six months. Swelling of the mandibular lymph node, sometimes with sinus formation and a purulent discharge, was noted in some cases. In others where the mesenteric lymph nodes were primarily involved, the symptoms were usually diarrhoea and vomiting of a few days' duration. In those cases where the lungs were principally involved, the history was a loss of condition with a chronic cough. The temperature was invariably elevated in all cases.

Human type tubercle bacilli were isolated from 18 cases, the remaining four being bovine. It appeared that whereas the bovine type set up lesions in the mesenteric glands, the human type might set up disease either in the lungs or in the alimentary tract. No case of tuberculous gastritis or enteritis was observed. Other writers have recorded cutaneous tuberculosis but it was not met by the authors.

Whilst evidence pointing to the transmission of tuberculosis from dog to man is lacking, the danger must be stressed, particularly *via* the sputum and urine or from suppurating adenitis.

Detailed protocols of the cases are appended.

J. S. P.

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[PERMANENT DISTEMPER IMMUNISATION BY VACCINE ALONE. Whitney, L. F. (1940.) *Vet. Med.*, July, 1940. 409-414.]

The author has studied the factors which may be responsible for failures of the Laidlaw-Dunkin vaccine-virus method in the field. The frequent absence of a reaction to the immunising process led to an examination of the commercial dried virus. Of 21 samples obtained from the stocks held by veterinarians, and from one to eleven months old, 20 failed to produce distemper in young dogs, and the dead virus in these samples did not produce an immunity. Evaluation of the vaccine used was based on experiments in which three groups of puppies were given (*a*) commercial vaccine followed by virus; (*b*) a freshly prepared vaccine stored for only 48 hours; and (*c*) a vaccine prepared and used under conditions similar to those for commercial products. The last group received two doses, 6 and 20 days after preparation. The puppies were exposed to contact infection several months after vaccination. The results are abbreviated in the following table.

Group	*Exposed (months later)*	*Number of Animals*		
		Immune	*Light attack*	*Fatal attack*
Commercial vaccine-virus ...	2½	17	10	9
Fresh vaccine ...	6½	27	4	0
Commercially-handled vaccine	5	11	17	13
Control ...	—	1	43	104

The high mortality in the controls is explained by the fact that no attempt was made to treat the affected dogs. It is concluded from these results that a good vaccine is capable of producing a solid immunity. Virus after vaccine is regarded as an insurance against a poor vaccine, but, as commercial virus, unless carefully handled, may be inactive at the time of inoculation, it is doubtful if this factor is of much account. Vaccination, even with commercial products, is better than none at all.

J. B. B.

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[EXPERIENCES AT AN ARMY VETERINARY HOSPITAL. Westhues. (1940.) *Tierärztl. Rdsch.* **46.** 526-528.]

This is a précis of an article in the *Zschr. Vet.-kunde* by the peace-time professor of surgery at Munich Veterinary School.

1. *General Anaesthesia.*—The former German reliance on chloral hydrate has given place under the Nazi regime to chloroform inhalation anaesthesia, which is applied in the English manner before casting or any kind of restraint. Over 1,000 horses have been so treated without complication.

2. *Wound Treatment.*—Emphasis is laid on the importance of the natural powers of healing and on the harmfulness of the frequent application of more or less strong disinfectants and antiseptics. Rest and bandaging are important. Fistulous withers is best treated non-surgically. Drainage openings, if made, should be led through uninflamed tissue and should be made by actual cautery or surgical diathermy.

Formaldehyde (0·5 per cent.) is recommended for wounds and sores of the feet, as it dries the parts well. It is also used for soaking into a bandage which is placed over open joint wounds, which are not irrigated. Abscesses are emptied and repeatedly irrigated with rivanol (0·02 per cent.), which is sucked out, not left in for a period. Plastic operations to make good skin loss are used in suitable cases.

3. *Canker of the Foot* is largely a general metabolic disorder. It is treated locally by a pressure bandage and the horse kept at work if possible. Operations are not undertaken before the above treatment has had no success over four to six weeks.

4. *Laminitis.*—Cases with dropped coffin bone require at least four months' treatment, which is effected by a bar shoe open at the toe so as not to bear on the toe of the hoof.

5. *Navicular Disease.*—The abstract on this section has resolved itself into a polemic over priority in the invention of the described method of volar neurectomy, the abstractor (Professor Bolz, of Giessen Veterinary School) claiming the lead of a short head.

J. E.

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[THE MANAGEMENT OF HORSES RETURNED FROM ARMY TO FARM WORK. Schmidt, W. (1940.) *Tierärztl. Rdsch.* **46.** 545-547.]

The author has seen that many farmers have had trouble with horses sent back from the German Army. He therefore summarises here the points which require attention. The standard army shoe is a plain flat one, which is unsuitable for farm horses in hilly or boggy country, which demands the use of calkin shoes, etc. Ex-army horses are often exhausted and need rest and feeding-up before being worked hard. They also need a gradual change from the army dry fodder to green fodder, to utilise food of farm sources. It is emphasised that the change-over must be very gradual.

J. E.

National Veterinary Benevolent and Mutual Defence Society

ANNUAL GENERAL MEETING AT MANCHESTER

The Annual General Meeting of the above Society was held at the Grand Hotel, Aytoun Street, Manchester, on the afternoon of Tuesday, May 6th, 1941.

Mr. W. Woods, F.R.C.V.S. (President), occupied the chair, and there were also present Messrs. G. H. Locke (Vice-President), J. Holroyd, A. H. Watson, A. J. Wright, Miss H. Patchett, F. Hopkin (Hon. Treasurer) and R. C. Locke (Hon. Secretary).

Apologies for absence were received from Messrs. H. W. Dawes and E. H. Curbishley. Mr. Curbishley, in his letter, asked the members to accept his resignation from the Council on the grounds of indifferent health. The meeting unanimously decided to inform Mr. Curbishley that they could not see their way to accept the resignation of one who had been such a valuable and energetic member of Council for so many years, and the Hon. Secretary was asked to convey to Mr. Curbishley the hopes of the members for his restoration to health and to active participation in the activities of the Society.

Election of Officers for 1941

President.—Mr. William Woods (Wigan).

Vice-President.—Mr. G. H. Locke (Manchester).

Council.—Messrs. A. J. Wright (Macclesfield), J. Holroyd (Blackburn), J. H. Wright (Manchester), E. H. Curbishley (Alderley Edge), D. Imrie (Glasgow), H. Sumner (Liverpool), F. L. Gooch (Stamford), W. Shipley (Great Yarmouth), G. Mayall (Bolton), A. Cornish Bowden (Beckenham), O. V. Gunning (Acle), W. K. Townson (Peterborough), H. W. Dawes (West Bromwich), W. D. Rees (Glamorgan), R. Barons Nelder (Exeter), A. H. Watson (Bradford), J. F. Craig (Liverpool), and C. F. Shawcross (Altrincham).

Hon. Treasurer.—Mr. F. Hopkin (Knutsford).

Hon. Secretary.—Mr. R. C. Locke (Manchester).

Auditors.—Mr. J. Adamson, and Messrs. Litton, Pownall, Blakey and Higson.

Financial Report

In presenting his annual report, the Hon. Treasurer stated that the finances of the Society were in a sound position. Never in the history of the Society had it been more important for a policy of careful adjustment between income and expenditure to be carried out. Although the number of members was actually larger than ever before, it was unfortunately true that the income from subscriptions was less than the previous year. Arrears of subscription were a source of worry to the Treasurer as well as an expense on funds, and he appealed to all members to pay their subscriptions regularly and, to those in arrear, to send along the amount owing. Over £600 more had been invested for the Benevolent Fund during the year and the amounts in hand could be considered satisfactory, but this was due to the Society's share of the sums raised in response to the N.V.M.A. Veterinary War Fund Appeal and to the fact that the benevolent calls on the Society had not been greatly increased. This state of affairs could hardly be expected to continue indefinitely in the present difficult times and, with income-tax, etc., increasing and income from investments decreasing, it was up to every member to do his or her utmost to help the Society to increase its membership and thereby its income.

The Report and Balance Sheet were unanimously adopted.

The meeting closed with a vote of thanks to the President for his conduct in the chair.

R. C. Locke, *Hon. Secretary.*

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Defence Cases

1. Claim against member for loss of cattle following treatment. Case settled out of court. Society paid costs.
2. Threatened claim against member following operation on bull. Advice given.
3. Claim against member following death of pony. Case settled amicably. Society paid costs.
4. Threatened claim against member following death of cow. Society supported member and gave advice. Case dropped.
5. Threatened action against member for alleged cruelty. Advice given. Case not proceeded with.
6. Threatened action against member following deaths of calves. Advice given. Case settled out of court.
7. Threatened action against member following death of mare. Advice given. Case not proceeded with.
8. Threatened action against member following loss of dogs alleged to have contracted disease whilst in member's kennels. Society supported member and gave advice. Case dropped.

Beneficiaries

M. J.	90	Widow	£2	0	0	per month
L. H.	—	4 children	£4	0	0	,, ,,
M. D.	67	Widow	£3	10	0	,, ,,
E. B. C.	58	Widow	£2	0	0	,, ,,
M. A.	45	Widow	£2	0	0	,, ,,
M. B. B.	77	Daughter	£2	0	0	,, ,,
A. J. P.	69	Widow	£2	0	0	,, ,,
L. M. R.	45	Widow	£4	0	0	,, ,,
K. L. H.	88	Widow	£2	0	0	,, ,,
A. P.	63	Widow	£4	0	0	,, ,,
F. J.	48	Widow	£4	0	0	,, ,,
J. L.	64	Widow	£2	0	0	,, ,,
P. V.	86	M.R.C.V.S.	£2	0	0	,, ,,
W. S. G.	69	M.R.C.V.S.	£2	0	0	,, ,,

and an emergency grant of £10

SULPHANILAMIDE OINTMENT

Formulae for sulphanilamide ointments have appeared recently in the American medical Press, and it is claimed that an ointment in which sodium alginate is incorporated in the base does not cake in wounds and can be used in ophthalmology.

Sulphanilamide 10 gm. is dissolved in 25 mils. of hot water (almost boiling) and the solution filtered. Sodium alginate 4 gm. is emulsified with 75 mils. of boiling water and the resulting mucilage strained through fine gauze. The strained mucilage is mixed while hot with the sulphanilamide solution and stirred until cold.

Sodium chloride 1 gm. is dissolved in 4 parts of water and mixed with an ointment consisting of anhydrous wool fat 16 gm. and white soft paraffin 78 gm. The sulphanilamide-sodium alginate suspension is incorporated into this base and triturated until smooth.

Another formula which has been suggested uses 100 parts of hot starch solution, 15 parts of hydrous wool fat, and 50 parts of soft paraffin in place of the sodium alginate and fats used in the first formula.—*Pharm. J.*

IN PARLIAMENT

The following are among the questions and answers recently recorded in the House of Commons:—

Department of Agriculture, Scotland

Mr. Leslie asked the Secretary of State for Scotland whether he has considered the unanimous recommendation from the administrative and technical representatives of the Whitley Council of the Department of Agriculture for Scotland that, in the best interests of the State, and for the better co-ordination of administration, it is desirable that the filling up of the vacancy in the post of chief technical officer to the Department should not be delayed any longer; and at what decision he has arrived?

The Under-Secretary of State for Scotland (Mr. Westwood): This question was considered in March, 1940, when my predecessor stated that the arrangements then existing worked well in practice. My right hon. Friend has now reviewed the position and is satisfied that no change is called for in present circumstances.

Mr. Leslie: Seeing that this was the unanimous recommendation of the staff on a matter of vital importance to Scottish agriculture, will my hon. Friend be good enough to give the reasons why he could not accede to this request?

Mr. Westwood: That would take too long to be dealt with at Question Time, but executive decisions must be taken by the Government and do not necessarily follow recommendations made by an outside authority.

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Feeding-stuffs

Mr. Mathers asked the Parliamentary Secretary to the Ministry of Food (1) what quantities of imported and home-grown grain are allowed for consumption by horses normally used for racing and hunting purposes; and what percentages these quantities represent as compared with the last pre-war year; (2) what quantities of imported and home-grown grain are allowed for consumption by racing pigeons; and what percentages these represent of pre-war consumption.

Major Lloyd George: It is not possible to give any figures of current annual consumption by racehorses and hunters owing to the rapid changes in numbers and the variations in ration scales. The quantity of home-grown imported grain and other cereal foods allowed for racehorses amounted in the month of May to 386 tons. This is estimated to be about 17½ per cent. of the average monthly quantity consumed before the war. No rations were provided in May for hunters, but the total quantity of cereal foods allowed for in hunt stables in April was about 78 tons or approximately 10 per cent. of pre-war figure. The maximum quantity of imported or home-grown grain and maple peas that will be allowed for consumption by racing pigeons when the National Pigeon Service reaches its full permitted strength, will be about 7,400 tons per annum. Whilst definite figures of pre-war consumption are not available, this figure is estimated to represent about 16 per cent. of the pre-war usage.

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Wheat (Flour Extraction)

Sir Malcolm Robertson asked the Parliamentary Secretary to the Ministry of Food, seeing that the extraction of flour from wheat has been raised from about 70 per cent. before the war to 75 per cent. to-day, what is the loss of animal feeding-stuffs per week thereby incurred, and the additional loss that would arise for each 1 per cent. increase in the rate of extraction above the present figure?

Major Lloyd George: While it would not be in the public interest to publish figures from which the present production of flour and animal feeding-stuffs might be calculated, I am happy to be able to assure my hon. Friend that there has been no appreciable decline in the supply of home-milled wheat by-products, as compared with the pre-war supplies.

Mr. Loftus: Will the Minister consider the gain to public health in providing the public with nutritious flour, instead of the devitalised product hitherto offered by the great milling concerns?

Major Lloyd George: My hon. Friend is probably aware that a great deal of work has already been done in this regard.

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Sir M. Robertson asked the Parliamentary Secretary to the Ministry of Food whether he is aware that, if the rate of extraction of flour from wheat were raised to 85 per cent. in order to provide a universal wholemeal loaf, it would increase the amount of flour available by 13½ per cent., but the resultant decline in the amount of wheatfeed would be 40 per cent.; and, in view of the substantial reduction in the importation of maize and barley from abroad, what steps he proposes to prevent further reduction in the supply of wheatfeed which must lead to a considerable decrease in the nation's milk and meat supplies and to a heavy slaughtering of livestock?

Major Lloyd George: The percentages quoted by my hon. Friend are substantially correct. As regards the latter part of his Question, the possibility of avoiding a reduction in the supply of home-milled wheat by-products depends, to a considerable extent, upon the availability of shipping.

Mr. Stokes: Does the Minister not think it highly desirable that these vitamins should be fed to the human species direct, insteed of through the digestive organs of a cow?

Major Lloyd George: That process is the first consideration.

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Control of Eggs Produced on Commercial Holdings

Following a statement by Major Lloyd George, Sir William Davison: Is a private individual still limited to 12 fowls, and will he be able to get feeding-stuffs?

Major Lloyd George: He is free to sell at the price that anyone else is, and he gets the same price. I referred to the domestic producer as opposed to the commercial. Domestic producers are those who get their rations from the Domestic Poultry Keepers' Council, commercial producers get it through the agricultural executive committees. On the whole the figure is about 50 hens for the domestic producers and about that for the commercial.

Mr. Mathers: Will it be made possible for the poultry which are still alive to be kept alive in order that eggs may be produced from them?

Major Lloyd George: I should hate to think that this organisation did anything to cause the decease of any more hens. This statement ought to relieve their minds of any anxiety.

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Medicine Stamp Duties (Repeal)

Mr. de Rothschild asked the Chancellor of the Exchequer whether, in view of the Select Committee's proposals on patent medicines and the approval given to them by the House in 1939 when deciding to repeal the patent medicine duties, he will give further consideration to the proposals for a revised method of taxation as suggested by the Proprietary Association of Patent Medicine Manufacturers itself?

Captain Crookshank: I can assure my hon. Friend that these suggestions were among the many matters considered before my right hon. Friend announced the decision to repeal the Medicine Stamp Duties.

Mr. Horabin asked the Chancellor of the Exchequer whether he is aware that, in proposing to repeal the Medicine Stamp Duties, his predecessor was influenced by the action threatened by Messrs. Woolworth for illegal administration of the duties; and whether, as an alternative to repeal, he will consider the introduction of a Bill to legalise any such administration?

Sir K. Wood: The legal action to which my hon. Friend refers merely illustrated the difficulties to which the administration of these antiquated Acts continually gave rise. The answer to the second part of the Question is therefore in the negative.

Major Procter asked the Financial Secretary to the Treasury what is the present approximate annual yield of the Purchase Tax upon medicines; and to what extent this yield exceeds the present annual yield of the Medicine Stamp Duties?

The Financial Secretary to the Treasury (Captain Crookshank): Before the announcement of the abolition of the Medicine Stamp Duty in the recent Budget it was estimated that the yield of the duty in a full year would be £800,000. Precise figures of the yield of the Purchase Tax on prepared drugs and medicines are not available, but I think it possible that the yield for a full financial year will be of the order of £3,000,000.

Mr. White asked the Minister of Health whether he is aware that the widespread advertising of patent medicines, often with an appeal to fear, leads large numbers of people to treat their own ailments instead of using the medical services available under the National Health Insurance Acts; and whether, as the repeal of the medicine duties will stimulate such advertising, he will reconsider the proposal for repeal?

Mr. E. Brown: I have no specific evidence that any large number of insured persons treat their own ailments instead of consulting their Insurance doctors and my hon. Friend can be assured that this was among the matters considered before my right hon. Friend the Chancellor of the Exchequer announced the decision to repeal the medicine stamp duties.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

June 30th.—R.C.V.S. Oral and Practical Examination begins.

July 4th.—Meeting of the North of England Division, N.V.M.A., at King's College, Newcastle-on-Tyne, 6 p.m.

July 11th.—Annual Summer Meeting of the Lancashire Division, N.V.M.A., at Manchester; luncheon 12.30 p.m. for 1 p.m.

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Petrol Supplies for Veterinary Surgeons

In the interest of national economy in the use of petrol it is absolutely essential that all users, including members of the veterinary profession, should reduce their travel by car to the minimum. Veterinary practitioners are asked to organise their daily round to this end and to encourage their clients to send in requests for their services early in the day to enable this to be done most effectively.

A deputation waited upon the responsible officers at the Ministry of Mines at Lytham St. Anne's on Saturday last, June 21st, and put to them the position of the veterinary practitioner in respect of petrol supplies—to the effect that, owing to the increasing work expected of the veterinary profession as the result of the introduction of schemes for the control of the diseases of animals, and by reason of the enhanced value of the individual animal, etc., etc., the normal demands of the practitioner might be expected to increase in the near future. The officials of the Ministry of Mines promised to put the views of the profession before a higher authority in order that these might be adequately considered, but it is as well to warn all members of the profession that an all-round reduction in supplies of petrol to every member of the community appears to be a necessity arising from the present position.

Beyond this brief statement of the situation, as things now stand, nothing further can be said at the moment.

AGRICULTURAL IMPROVEMENT COUNCIL FOR SCOTLAND

The appointment of an Agricultural Improvement Council for England and Wales, announced in our last issue, has been followed by that of a similar body for Scotland, as foreshadowed by Mr. Hudson in the words: "As Scottish problems do, in many respects, differ considerably from those of England and Wales, my right hon. Friend, the Secretary of State for Scotland, will appoint a similar body for Scotland. I should add that it is hoped that members of the Agricultural Research Council will be appointed both to the English and the Scottish bodies so as to preserve as close a liaison as possible."

The terms of the remit are the same, *viz.*: "To devise methods for seeing that promising results of research are applied as rapidly as possible to the problems of agriculture and are incorporated in ordinary farming practice; and to advise from time to time concerning agricultural problems which appear to require scientific investigation."

List of Members

The following are the names of the members of the Council, who have been appointed in the first instance for a term of three years:—

Sir Patrick R. Laird, C.B., Secretary of the Department of Agriculture for Scotland (Chairman);

Mr. J. M. Caie, Deputy Secretary of the Department of Agriculture for Scotland;

Mr. Joseph F. Duncan, Sectional Secretary, Scottish Farm Servants' Section, Transport and General Workers' Union;

Major James Keith, Chairman of the Board of Governors of the North of Scotland College of Agriculture;

Professor T. J. Mackie, M.D., D.P.H., F.R.C.P.E., Professor of Bacteriology, Edinburgh University, and member of the Agricultural Research Council;

Principal W. G. R. Paterson, O.B.E., B.SC., Principal of the West of Scotland Agricultural College;

Sir Joshua P. Ross-Taylor, Vice-President of the Board of Governors of the Edinburgh and East of Scotland College of Agriculture;

Professor Ernest Shearer, M.A., B.SC., Principal of the Edinburgh and East of Scotland Agricultural College;

Mr. J. A. Symon, D.S.O., Senior Inspector, Department of Agriculture for Scotland;

Mr. W. W. C. Topley, M.D., F.R.S., Secretary of the Agricultural Research Council;

Mr. A. R. Wannop, Director of County Work, North of Scotland College of Agriculture;

Mr. T. G. Wilson, member of the Governing Body of the West of Scotland Agricultural College.

Mr. W. N. M'William, Department of Agriculture for Scotland, will act as Secretary of the Council.

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UNIVERSITY OF LIVERPOOL

Prof. J. G. Wright's Appointment to the Chair of Veterinary Surgery

The University of Liverpool has now appointed to the vacant Chair of its Veterinary School Professor John George Wright, F.R.C.V.S., Professor of Surgery in the Royal Veterinary College, Camden Town, London.

Professor Wright, after service in the Royal Artillery during the last war in France and Flanders and in the Black Sea area, entered the Royal Veterinary College,

and obtaining as a student many distinctions, which included the 1st FitzWygram and Williams Prizes, graduated in 1923. After some years of private practice he obtained the Fellowship Diploma of the Royal College of Veterinary Surgeons (1928), and was appointed Professor of Materia Medica in succession to Mr. A. R. Smythe, F.R.C.V.S.; also as Officer in charge of Poor Outpatients' Department at the Royal Veterinary College. He was appointed Professor of Surgery in 1937. Our readers will recall that Professor Wright was made the first recipient of the Dalrymple-Champneys medal by the National Veterinary Medical Association, in 1934. In 1936 he was President of the Central Veterinary Society. He is the author of a large number of papers upon different aspects of veterinary science, mainly connected with operative surgery, anaesthetics and obstetrics.

The appointment of this distinguished surgeon is made more significant by the decision of the University to establish a Field Station and Field Hospital in Wirral, where the greater part of the clinical instruction of the veterinary students will be given. This important decision has been made possible by the public spirit of Messrs. J. Bibby and Sons, who have been generous enough to offer to the University extensive facilities upon their experimental farms in Wirral for the instruction of students under the supervision of their teachers.

Professor Wright will take up his post in September.

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PERSONAL

Birth.—On June 22nd, at Brampton, Cumberland, to Marjorie, wife of W. K. Carnegie, B.Sc., M.R.C.V.S.—a son.

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R.C.V.S. OBITUARY

Hewetson, William Toppin, The Hollies, Brampton, Cumberland. Graduated Edinburgh, December 20th, 1894. Died June 20th, 1941; aged 73 years.

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The Late Mr. James Martin, sen., M.R.C.V.S.

An Appreciation

As recorded in your last issue, there passed away on Thursday, June 12th, at Wellington, Salop, a stalwart of the veterinary profession. For 59 years James Martin practised the art of veterinary surgery and medicine and gave of his best to his clients and patients.

On leaving school he entered the service of the Caledonian Railway Company and for nine years with that company had considerable experience whilst in charge of the very large stud of horses which the company owned at the time. He entered the Glasgow Veterinary College in 1879 and, after qualifying, he eventually came to Wellington where he commenced to practise. His ability and steadfast application to his work soon gained him a firm circle of clients and friends. Many eminent members of the profession can testify to his ability as a teacher when they spent their vacations with him as pupils. His kindly manner and the infinite pains which he took to try and instil knowledge into the young were amply repaid by the affection which his former pupils bore him. James Martin was a skilled practitioner and keen observer. He lived only for his work, having no hobbies or amusements. One client said of him: "For 40 years I have called on him at all times of the day and night and never have I received anything else but attention and kindness; even at the end of a long day he has turned out without a grumble."

In spite of having a very large practice, James Martin found time to take part in the government of his town. With the exception of a break during the last war period, he had been a member of the Urban District Council since 1898 until his retirement a few years ago. He occupied the position of Chairman from 1903-1905 and later from 1927-1929.

He was a very enthusiastic member of the N.V.M.A. and seldom missed an annual congress. His jovial manner made many friends amongst young and old, and it can be said that he and his particular friends burnt the midnight oil, discussing every matter imaginable appertaining to veterinary work, after the various functions which enlivened the congress evenings.

James Martin's death is a great loss to the veterinary profession, and will be deeply regretted in Shropshire, where he had a very large circle of clients and friends. His judgment and advice will be greatly missed.

A very suitable epitaph would be, "Well done, thou good and faithful servant."

F. C.

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USE OF MEDICAL SERVICES

The following will be the members of the Committee (announced by Mr. Ernest Brown, the Minister of Health, in the House of Commons recently) which has been set up to investigate what further steps can usefully be taken to secure the utmost economy in the employment of medical personnel in the Forces, the Emergency Hospital scheme, the Civil Defence Services, and all other medical services:—

Mr. Geoffrey Shakespeare, M.P., Under-Secretary for the Dominions (Chairman); Professor R. M. F. Picken, M.B., B.Sc., D.P.H., Welsh National School of Medicine; Sir Alfred Webb-Johnson, C.B.E., D.S.O., F.R.C.S., Vice-President of the Royal College of Surgeons; Dr. J. Crighton Bramwell, M.D., F.R.C.P.; Professor Sydney Smith, M.D., F.R.C.P.(EDIN.), D.P.H., F.R.S.(EDIN.), Edinburgh University; Dr. J. A. Brown, M.D.; Dr. William Malcolm Knox, M.B., CH.B.; and medical representatives of the Admiralty, War Office, and Air Ministry.

In addition, the following have agreed to be closely associated with the work of the Committee:—

Sir Charles Wilson, M.C., M.D., President of the Royal College of Physicians; Sir Hugh Lett, C.B.E., President of the Royal College of Surgeons; and Dr. H. S. Souttar, C.B.E., M.D., F.R.C.S., Chairman of the Central Medical War Committee.

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CAVALRY'S VALUE IN THE SYRIAN CAMPAIGN

In a message despatched from "near Sidon" on June 14th, *The Daily Telegraph* Special Correspondent with the Australian Forces in Syria wrote: "While Australian infantry and mechanised cavalry are hammering at the gates of Sidon, a force of horsed cavalry from a famous English Yeomanry regiment is pushing its way across the rough, hilly country which bounds the narrow coastal plain. The job they are doing vindicates the retention of some horsed cavalry, because they are operating across country which is absolutely impassable to armoured fighting vehicles, and they are pushing ahead much faster than infantry could hope to do.

"These cavalrymen are delighted to have a real job to do at last. They had spent months of dull though necessary garrison duty in Palestine, and now have a role after a cavalryman's heart. They have even had the satisfaction of staging an old-fashioned charge with sabres. A squadron surprised a force of French entrenched on the outskirts of a village and rode through them twice, routing them completely.

"I watched the British horsemen moving up across the plain with the jingle of bits and accoutrements, and the clink of sabres against stirrup-irons, and it was a sight to stir the pulses. It was like a breath from the old days, when war was a less cold-blooded and mathematical affair than to-day—a last touch of romance in an unromantic and unpleasant business."

H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at Hotel Lindum, St. Anne's, Lytham St. Anne's, Lancs.

	Price net s. d.	Post free s. d.
House of Commons Papers:		
Colonial Development Fund. Abstract Account of the Receipts into, and issues out of, the Fund in 1939-40; together with the Report of the Comptroller and Auditor General thereon	0 6	0 7
Statutory Rules and Orders, 1941:		
E.P.810. Vitamin A (Control) Order, June 7	0 1	0 2

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THE FARMERS' CLUB

In spite of the present conditions, no fewer than 45 members have been elected to the Farmers' Club this year, bringing the membership to 1,320.

Of recent months, the club has added considerably to its library, and to enable its members to take the fullest advantage of this source of information it has been decided to institute a loan service by which members are able to borrow books without charge. Details of this service can be obtained from the club, whose address is 2, Whitehall Court, London, S.W.1.

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STRAW PULP PLANTS FOR CATTLE FOOD PRODUCTION

The Minister of Agriculture is anxious to see a widespread adoption on suitable farms of the caustic soda treatment of straw, commonly known as the straw pulp process, and has arranged for a campaign among farmers on lines similar to the silage campaign, which is now showing excellent results. Treatment with caustic soda turns all straw, whether wheat, barley, or oat, into a starchy food which is much nearer a concentrate and will replace sugar beet pulp and roots.

In view of the acute shortage of livestock foods which must be expected, every farmer with livestock, straw, and a good supply of farm water should without delay give very careful consideration to the question of installing a straw pulp plant in readiness for winter. Information will shortly be available from county war agricultural executive committees.

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MINISTRY OF AGRICULTURE NEWS SERVICE

Railway Companies Renew Offer.—Some of the grass on railway embankments can be converted to practical farm use, either as hay, silage or bedding. A survey made at the end of last season indicates that hundreds of farmers took advantage of the facilities afforded by all the railway companies to harvest any grass on slopes adjoining their farms. Amounts collected ranged from single loads to several tons. Quality was generally medium. The majority of farmers considered the job worth while, and a number were ready to pay a nominal sum for the privilege. Practically all fully intend repeating their operations this year where labour and transport are available. The feeding stuffs position has become so acute that it is highly desirable that strenuous efforts should be made to increase the amount of suitable grass collected. The offer by the railway companies remains, although in certain areas the companies may desire to reserve the grass on their embankments for their own use. Farmers wishing to take advantage of these facilities should apply for permission to harvest the grass to the local station master.

* * * * *

Maize: Good Insurance Against Dry Summers.—In the warmer southern counties where pastures are liable to fail prematurely, especially in dry summers, maize has proved a most useful supplementary green food for stock. On good land manured with dung and artificials, *e.g.* 1½ cwt. sulphate of ammonia and 2 cwt. superphosphate per acre, as much as 30 tons per acre of green forage may sometimes be grown. Seed of suitable varieties such as American White Horse Tooth and South African White maize is available and should be ploughed in about the end of May to the middle of June. The seed is usually dropped in every alternate furrow at the rate of about 1½ or 2 bushels per acre.

Maize makes good silage if it is cut up. It should be allowed to wilt a little before carting and then put through the chaffer. Mixture with some straw chaff would help to absorb juice that might otherwise drain away. In view of the high feeding value of the crop and the heavy yields obtainable, it seems particularly desirable in these times to make the fullest possible use of this valuable crop.

Rooks find the germinating grain very attractive and must be kept off until the plant is up.

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MEDICAL SUPPLIES AND GAS

Ministry of Health Suggestions

The Ministry of Health has issued a circular (No. 2385) concerning the precautions which it may be practicable to take against gas contamination of medical supplies.

In general, says the circular, the problems which arise in this connection are analogous to those arising in connection with the protection of foodstuffs, and accordingly the handbook issued by the Ministry of Food entitled "Food and Its Protection Against Poison Gas," will afford considerable assistance in determining the steps to be taken for the protection of medical stores. A.R.P. handbooks Numbers 4 and 4*a* may also be useful in this respect.

The normal conditions of storage of medical and surgical supplies in suitable warmed and ventilated buildings should provide, for most articles, all that is practicable in the way of protection against liquid contamination; some additional protection can also be afforded by using existing stocks of waterproof sheeting, batiste, cellophane or other impermeable material, to the extent that they are not required for immediate use as a covering for unprotected stores, or stores whose nature or wrapping do not of themselves provide protection.

The following remarks regarding particular classes of medical stores may be of assistance:—

Surgical Dressings.—Surgical dressings, cotton wool, bandages, etc., wrapped in paper, cardboard or cartons would not become contaminated by exposure to vapour, providing the wrappings are undamaged. Traces of vapour can, if necessary, be removed from such materials by opening them out and airing for an hour or so in a clean, well-ventilated warm atmosphere. Sterilisation might be undertaken where the means are available. If contaminated by liquid it is extremely doubtful whether any decontamination treatment would be satisfactory and destruction by burning may be unavoidable.

Drugs and Medicines in Metal Containers.—If adequately sealed, no contamination of the contents can occur. If contaminated by liquid the containers should be decontaminated by repeated swabbing with solvent, such as paraffin, petrol, etc., and airing; the corks, etc., unless protected by metal or other seal, should be destroyed and replaced by new ones.

Rubber Materials.—In the case of surgeons' aprons, waterproof sheeting, hot-water bottles, etc., vapour contamination will, in general, not be serious and could be removed by airing. If contaminated by liquid, decontamination by immersion in boiling water for a period of one to three hours, depending upon the thickness of the rubber, would be essential. The finest grades of rubber materials (gum elastic catheters, surgeon's gloves, fine rubber drain sheeting, etc.) are unlikely to stand boiling, and if contaminated by liquid should be destroyed. Covering to prevent such contamination is therefore most desirable.

FURNITURE.—The decontamination treatment for wooden furniture, bedding, etc., is detailed in A.R.P. handbook Number 4. In the case of bedding in general and mattresses in particular, treatment in a steam disinfector is the only practical process. Metal instruments and utensils, depending on their nature, can be decontaminated by immersion for 30 minutes in boiling water or repeated swabbing with solvent.

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"SILAGE HAS COME TO STAY"

"In starting to make silage, you will begin a new endeavour which will probably have to be carried out for a considerable number of years, because we cannot recover from this war in a few years' time," said Mr. H. I. Moore, cropping and silage officer, at a demonstration of silage making on Burton Common Farm, South Milford, Yorks, recently.

Lord Harewood, who spoke on the necessity for farmers to make as much silage as possible, said: "Farmers are now some of the most important key men in the war machine. It is quite a new position for the farmer to be in, but one of the disagreeable sides of it is that the whole country is now watching you to see that you make the most of what you have got."

Farmers from all parts of the North Riding attended a silage demonstration at Ryebeck Farm, Thirsk, marking the opening of the year's national campaign in that part of Yorkshire.

Mr. Tom Williams, M.P., Joint Parliamentary Secretary to the Ministry of Agriculture, addressing the gathering under the chairmanship of Sir Bedford L. Dorman, said silage making was a practical farming operation, which had been made well nigh foolproof. Imported feeding-stuffs were dwindling so rapidly that, apart from a miracle, there would be little or none at all next season. It was not that the Ministry wanted them to spend more money, put them to more trouble than hitherto, or add to the multitudinous operations on the farm for a temporary period. At the end of hostilities there would be such a shortage of shipping that, even if there were the will to import feeding-stuffs, there would be neither the money nor the ships to do so, as before the war. Therefore, their investment was not for one, but for many years.

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RESCUE OF OLD WAR HORSES

£2,000 FOR LIBEL

In the King's Bench Division of the High Court, on Monday last, Mr. Justice Tucker awarded Mr. Evan Keith Robinson, Secretary of Our Dumb Friends' League, £2,000 damages in the libel action which he brought against Mr. Henry Newnham, Truth Publishing Company, Limited, and Loxley Brothers, Limited, the Editor, proprietors, and printers respectively of *Truth*, in respect of an article published in that journal in October, 1938, in connection with the league's campaign for the rescue from Belgium of old war horses.

Entering judgment, with costs, Mr. Justice Tucker said the article imputed that the conduct of Mr. Robinson justified the attention of the Public Prosecutor. *Truth* alleged that money had not been used for the express purpose of repatriating the horses.

The defendants had not been within measurable distance of proving conduct which justified the attention of the Public Prosecutor.

Stay of execution was granted, pending a possible appeal.

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A decree issued by the Argentine Government forbids for ten years the hunting of certain wild birds and animals which live in the Andes mountains. These include the condor and several species of deer, which have diminished alarmingly.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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AN ESCAPE FROM ALIEN DOMINATION

To the Editor of the Veterinary Record

Sir,—I think the profession owes a debt of gratitude to Professor Crew for the warning contained in his letter published in your issue of May 31st. It might be argued that the medical invasion of the realm of veterinary science commenced with a demand for co-operation which was readily acceded to. This was followed by an accusation of low mentality and defective education which, under the compulsion of their financial and political power, was used as an excuse for filling the key positions of the profession with leaders selected by them or their agricultural allies. The next step has been the occupation, by medical men, of positions which should be held by veterinarians, and now Professor Crew suggests that they may depose our leaders and take direct control of our schools.

If this view is accepted it would have to be assumed that the actions of the medical fraternity are due to their belief that they are the "Herrenvolk" of science, and that, with their inherent infallibility, they are capable of introducing a "new order" into the animal health services though they have no training in animal husbandry—one can hardly think that stock experts would accept this assumption.

Our main concern must be to attempt to protect the stock industry from the incompetence of untrained "specialists," and to see that the descendants of the "old horse doctors" who freed Britain from rinderpest, bovine pleuro-pneumonia and glanders are not relegated to the position of "young dog doctors," and denied the opportunity of saving the country's stock from the less spectacular, but no less deadly, enemies to health and efficiency which are now operating.

I would suggest that no outstanding veterinarian is likely to arise until the profession is allowed to develop its own genius under its own leaders. The council of the Royal College of Veterinary Surgeons, who are at least the elected representatives of the profession, should be made responsible for the selection of the heads of our educational institutes, in consultation with the staffs of those institutes, and should also be consulted on the filling of other key appointments.

Although I do not suppose most of us would accept the picture of medical aggressiveness which has been given, it is doubtful if a small and poor profession will ever be safe from political interference by its more powerful neighbours, and some form of federation with medicine or agriculture would seem to offer the only hope of our obtaining full recognition. Our foundations are in agriculture even if some of our higher departments must intercommunicate with medicine, and I would suggest that the qualification for entrance to a veterinary school should be made the B.Sc. in agriculture, and that such preliminary subjects as chemistry, botany and zoology should be dropped from our curriculum and certain other subjects considerably reduced, except for those who wish to specialise in them. We could then hope to be recognised as the animal health experts of the agricultural industry.

Yours faithfully,

U. F. RICHARDSON.

110, Craiglea Drive,
Edinburgh, 10.

June 8th, 1941.

THE PROFESSION AND OUR WAR ECONOMY

To the Editor of the Veterinary Record

Sir,—Eminent members of our profession have for too long a period been forced to minister to the needs of pet dogs and cats instead of performing their true function, which is presumably to increase our knowledge of animal management and preventive medicine, and to train students in the basic principles of these subjects. Agricultural scientists, on the other hand, have not been diverted from their main task, and our profession has suffered by comparison.

The stress of total war, however, has forced us to realise our true function, and as a result the survey scheme has been formulated. It appears to the writer that we must exert all our powers to make the scheme a success, because the future status of the profession will depend largely on the part it plays in helping to win the war.

A recent visit to the knacker's has convinced me that it is not enough to aid the production of meat and milk, but that we must also endeavour to prevent gross wastage of animals and their by-products. In the lairage, awaiting slaughter, was a four-year-old Shire type gelding in excellent condition, which, on enquiry, was found to be one of a large number of good working horses at present being slaughtered because they have a higher value as potential dog meat than farmers can afford to pay for them. Unless the Ministry of Agriculture, after considering all aspects of our war economy, have decided that the farm horse is an inefficient source of power this slaughter of horses should be prevented. But if horses in good condition must be slaughtered the perfectly wholesome meat should be used for human consumption, as it has been officially stated that horse flesh is being incorporated in various meat preparations. It is also evident that there is great wastage of animal by-products. The blood is allowed to run down the drain and the entire intestinal tract, including the very valuable fat adherent thereto, is being buried.

Other animals awaiting slaughter included a number of cattle comprising some yearling heifers and some old cows in the last stages of emaciation; animals which must have been uneconomic to the farmers for some months past. The suggested scheme of culling the worthless animals from the country's herds, in order to reduce the total number of cattle appears to be long overdue and if executed skilfully and thoroughly should prove to be of inestimable value to the agricultural community.

In addition to this wastage of carcase products and food-stuffs, it appears that the tons of horse and cow manure which accumulate at this knacker's have to be almost given away because no one wants it. Since such manure has, as yet, by no means been replaced by chemicals, surely some trouble should be taken to ensure its being used to the best advantage.

Our enemies appear to waste nothing and it would seem that, so far, they have utilised science to further their aims much more efficiently than we have, to our great disadvantage.

President Roosevelt has told us that British ships are being sunk twice as fast as they can be replaced by the combined resources of Britain and America.

I feel, therefore, that the profession should exert all its influence to prevent this reprehensible wastage of home-produced food-stuffs and their by-products.

Yours faithfully,

Ruth Hussey.

"Hillfoot,"
Horsell Vale,
Woking,
Surrey.

June 20th, 1941.

DISEASES OF ANIMALS ACTS, 1894 to 1937, and AGRICULTURE ACT of 1937 (PART IV)

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 31st May, 1941	28	33	35	4,235	1	2*	4	49	25
Corresponding period in ...									
1940	26	27	—	—	2	2	6	209	134
1939	34	41	—	—	2	5	1	147	113
1938	36	43	1	125	2	4	4	40	28
Total 1st January to 31st May 1941	244	265	253	26,098	8	23	129	724	343
Corresponding period in									
1940	260	282	18	2,552	14	27	115	1,667	1,051
1939	401	432	29	4,357	28	60	147	765	488
1938	429	468	152	19,883	40	65	98	220	145

Note.—The figures for the current year are approximate only. §Excluding outbreaks in Army Horses.
* 1 of these animals refers to an outbreak confirmed prior to May 16th, 1941.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from tuberculosis, as at May 31st, 1941, was as follows:—England 3,875 ... Wales 9,275 ... Scotland 3,278 ... Total (Great Britain) 16,428